EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Raymond Mah on 4-17-2008.

The application has been amended as follows: Claims 1 and 15 were amended.

1. (currently amended) A gas concentration measuring apparatus comprising:

a gas sensor configured to measure a concentration of a specified gas component contained in a gas and to output a sensor current corresponding to the measured concentration of the specified gas component; and

a measurement substrate where an electric circuit is formed, said electric circuit being electrically connected to the gas sensor and including a signal processing circuit configured to measure the sensor current outputted from the gas sensor,

wherein said electric circuit comprises:

a connection terminal electrically connected to the gas sensor and configured to receive the sensor current from the gas sensor, said connection terminal having input impedance of 500 kΩ or over;

a conductive pattern portion having conductivity and formed in the measurement substrate; and

an electric component mounted on the conductive pattern portion,

said conductive pattern portion including:

a signal input pattern electrically connected to the connection terminal, said signal input pattern having direct current impedance with respect to the connection terminal, said direct current impedance being 10 percent or less of the input impedance of the connection terminal;

a different potential pattern having a potential difference of 2 V or over from a potential of the signal input pattern; and

a guard pattem having a substantially constant potential and a potential difference of less than 0.5 V from the potential of the signal input pattern, said guard pattern being arranged on at least a portion of the measurement substrate, said at least portion of the measurement substrate being located between the signal input pattern and the different potential pattern,

wherein ~~the guard pattern is arranged on at least a portion of the measurement substrate, the at least portion of the measurement substrate is located between the signal input pattern and the different potential pattern,~~ the conductive pattern portion includes a signal measurement pattern constituting the signal processing circuit, a potential of the signal measurement pattern depends on that of the signal input pattern, the signal processing circuit comprises an operational amplifier, the signal input pattern is connected to a non-reverse input terminal of the operational amplifier so that the potential of the signal input pattern is input to the operational amplifier via the non-reverse input terminal thereof, an output terminal of the operational amplifier is connected to a reverse input terminal thereof so that the operational amplifier is configured to output, via the output terminal, a voltage that substantially equals to the potential of the signal input pattern, and the guard pattern is electrically connected to the signal measurement pattern.

15. (currently amended) A gas concentration measuring apparatus comprising:

a gas sensor configured to measure a concentration of a specified gas component contained in a gas and to output a sensor current corresponding to the measured concentration of the specified gas component; and

a measurement substrate where an electric circuit is formed, said electric circuit being electrically connected to the gas sensor and including a signal processing circuit configured to measure the sensor current outputted from the gas sensor,

wherein said electric circuit comprises:

a connection terminal electrically connected to the gas sensor and configured to receive the sensor current from the gas sensor, said connection terminal having input impedance of 500 kΩ or over;

a conductive pattern portion having conductivity and formed in the measurement substrate; and

an electric component mounted on the conductive pattern portion,

said conductive pattern portion including:

a signal input pattern electrically connected to the connection terminal, said signal input pattern having direct current impedance with respect to the connection terminal, said direct current impedance being 10 percent or less of the input impedance of the connection terminal;

a different potential pattern having a potential difference of 2 V or over from a potential of the signal input pattern; and

a guard pattern having a substantially constant potential within a range from 80 percent or more to 120 percent or less of the potential of the signal input pattern, said guard pattern being

arranged on at least a portion of the measurement substrate, said at least portion of the measurement substrate being located between the signal input pattern and the different potential pattern,

wherein ~~the guard pattern is arranged on at least a portion of the measurement substrate, the at least portion of the measurement substrate is located between the signal input pattern and the different potential pattern,~~ the conductive pattern portion includes a signal measurement pattern constituting the signal processing circuit, a potential of the signal measurement pattern depends on that of the signal input pattern, the signal processing circuit comprises an operational amplifier, the signal input pattern is connected to a non-reverse input terminal of the operational amplifier so that the potential of the signal input pattern is input to the operational amplifier via the non-reverse input terminal thereof, an output terminal of the operational amplifier is connected to a reverse input terminal thereof so that the operational amplifier is configured to output, via the output terminal, a voltage that substantially equals to the potential of the signal input pattern, and the guard pattern is electrically connected to the signal measurement pattern.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KAJ K. OLSEN whose telephone number is (571)272-1344. The examiner can normally be reached on M-F 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X. Nguyen can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kaj K Olsen/
Primary Examiner, Art Unit 1795
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